

**COURSE:** BIOLOGY 101: General Biology I

**DESCRIPTION:** Introduces the principles of biology, including the function, evolution and morphology of animals. Integrates lecture and laboratory sessions throughout the course.

**RECOMMENDED TEXT:** Neil A. Campbell, Jane B. Reece, Martin R. Taylor, Eric J. Simon, Biology: Concepts and Connections, 5<sup>th</sup> edition. 2006. Pearson Benjamin Cummings Publishing.

**RECOMMENDED LAB MANUAL:** Sylvia S. Mader, Inquiry into Life, 10<sup>th</sup> Edition, McGraw Hill Higher Education, ISBN 0072930691.

**FORMAT:** The examination is comprised of 100 multiple choice questions. Each question is worth 1 point.

**GRADING:** Students must receive a “C” (73-76) in order to receive credit for a course taken as a Challenge Exam.

**TOPICS FOR STUDY:**

1. Explain the levels of organization
2. List and describe the criteria (qualities) of life
3. Structures located in a generalized cell
4. Give one function for each cell part
5. Compare a plant and animal cell
6. Compare a prokaryotic and eukaryotic cell
7. List and describe all the stages of mitosis
8. Compare plant and animal mitosis
9. Be familiar with glycolysis, citric acid cycle and the electron transport system
10. Number of ATPs produced and location of glycolysis, Krebs cycle and electron transport system
11. Define an enzyme and list the four factors that effect the rate of an enzyme reaction
12. Describe the function of salivary amylase
13. Anatomy of an earthworm
14. Classification of organisms into kingdoms and Phyla
15. Identify the cells in a leaf cross section
16. List the overall equation for photosynthesis including reactants and products
17. Examples of organisms in Phyla
18. List the major taxonomic divisions
19. Describe the life cycle of a moss, be sure to include both the gametophyte and sporophyte parts
20. Describe the life cycle of a fern
21. Describe the life cycle of a flowering plant
22. Identify the parts of a flower
23. Explain pollination and fertilization in flowers
24. Describe digestive, circulatory, nervous, reproductive, and respiratory systems of the following animals: Amoeba, Paramecium, Hydra, Planaria, Earthworm and Grasshopper.

Be sure to include reference to complete and incomplete digestive system, intra vs. extracellular digestion, open vs. closed circulatory system, sexual vs. asexual reproduction, hermaphrodites vs. separate sexes.

25. List several evidences for evolution
26. Explain three theories for the origin of life
27. Describe the geological time scale
28. Draw the atomic structure of hydrogen, carbon, nitrogen, and oxygen
29. Describe ionic and covalent bonding
30. Explain enzymatic hydrolysis and dehydration
31. Give examples of and the major functions of carbohydrates, protein, fats and nucleic acids
32. Draw the structural formula for a generalized amino acid
33. Compare the two major contrasting theories of evolution (gradualism vs. punctuated equilibrium)